

ABSTRACT

Concerns lithium-doped diamond: Low-resistivity *n*-type semiconductor diamond doped with lithium and nitrogen, and a method of manufacturing such diamond are provided. Low-resistivity *n*-type semiconductor diamond containing 10^{17} cm^{-3} or more of lithium atoms and nitrogen atoms together, in which are respectively doped lithium atoms into carbon-atom interstitial lattice sites, and nitrogen atoms into carbon-atom substitutional sites, with the lithium and the nitrogen holding arrangements that neighbor each other. To obtain low-resistivity *n*-type semiconductor diamond, in a method for the vapor synthesis of diamond, photodissociating source materials by photoexcitation utilizing vacuum ultraviolet light and irradiating a lithium source material with an excimer laser to scatter and supply lithium atoms enables the diamond to be produced.